without TDF add-on in the treatment of CHB. **METHODS:** Analysis population consisted of patients (n=1000; 35% HBeAg-positive; 35 years old) without compensated or decompensated cirrhosis(CC, DC) or hepatocellular cancer(HCC). AVs compared were 1) Ldt 600mg/day; 2) Ldt + add-on TDF 300mg/day when non-response or viral resistance occurs; and 3)LAM 100mg/day (4)LAM + add-on TDF 300mg/day. A decision tree model with 5 parallel pathways for different levels of HBV-DNA was built using a 10-year time-horizon. Selected major clinical outcomes were mortality and life-years-lost (LYL). **RESULTS:** With LAM or Ldt monotherapy, 137CC, 5DC, 40 HCC cases and 70 dead versus 85CC, 3,5DC and 25HCC cases and 44 dead were expected to occur, respectively. With LAM or Ldt monotherapy, 1236 and 774 life-years will be lost, respectively. When a potent AV is added to LAM or Ldt, HBV complications were expected to decrease and avoided LYL were substantial (164 to 591 years, respectively). However, there is no important difference between starting with LAM or Ldt and adding TDF strategies: 1CC, 0 DC, 0HCC cases and 2 dead will be avoided. **CONCLUSIONS:** Ldt monotherapy was found to be superior to LAM monotherapy. However, Ldt +TDF does not seem a better approach than LAM+TDF in the treatment of CHB. This paradoxical finding might be explained due to marginally superior efficacy of Ldt versus LAM and a longer time-period before adding a potent antiviral to treatment.

PIN9

SYSTEMATIC REVIEW OF NON-INTERFERON BASED REGIMENS FOR CHRONIC HEPATITIS C TREATMENT

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OBJECTIVES: Chronic Hepatitis C virus (HCV) infection is one of the silent global epidemics with significant unmet need and disease burden. One of the major limitations of current treatments is the need for 12 or 6 months of Interferon based therapy, which has tolerability and toxicity issues for many patients. During last 2-3 years several new agents have been tested in clinic, which have shown promising results as non-interferon based therapy. Goal of this study was to review the clinical efficacy and safety profile of non-interferon based therapies for HCV treatment. **METHODS:** We searched the MEDLINE, and abstracts from AASLD and EASL until May 2011. Studies were selected for clinical trials on direct acting agents for HCV. Primary endpoints reviewed were Sustained Viral Response (SVR). Toxicity was evaluated as secondary endpoint. Aggregated data were further analyzed to understand comparative safety and efficacy. **RESULTS:** Until May 2011, results of five eligible HCV clinical trials for interferon free regimens were available. Overall, treatment with combination of protease and polymerase inhibitor showed dramatic viral load reduction after 2 weeks of treatment. The combination of PSI-7977 and PSI-938 showed 93% viral clearance after 14 days (n=16). The combination of RG7227 and RG7128 demonstrated 5.1 log reduction in viral load in treatment naive, and 4.9 log reduction in null responder patients after 14 days of treatment. The combination of BMS-790052 and BMS 650032 showed 36.3% 24 week SVR in null responder patients. One study evaluating VX-222 and Telaprevir combination was discontinued due to viral breakthrough. Several studies are currently on-going whose data would be available in 2011-2012. **CONCLUSIONS:** Non-interferon based therapies have shown impressive viral load reduction in short term studies. However, more data for SVR, viral breakthrough and resistance is needed to confirm their safe use in HCV infected population.

PIN10

CLINICAL AND ECONOMIC BURDEN OF HOSPITAL ONSET HEALTH CARE FACILITY ACQUIRED CLOSTRIDIUM DIFFICILE INFECTION (HO-HCFA-CDI) IN EUROPE: A SYSTEMATIC REVIEW

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OBJECTIVES: To describe the clinical and economic burden associated with hospital onset health care facility acquired *Clostridium difficile* infection (HO-HCFA-CDI) in European health care facilities (EHCF). **METHODS:** A systematic review of the PubMed, EMBASE and infectious disease societies was performed to capture clinical and economic burden of HO-HCFA-CDI in Europe. Included studies were published in English between 2000-2010 and had >20 patients with documented CDI acquired/treated in a EHCF. Data collection was completed by three un-blinded reviewers using Cochrane Handbook and PRISMA guidelines. The primary outcomes were mortality, recurrence, length of stay (LOS) and cost related to CDI. **RESULTS:** We identified 1138 primary articles and conference abstracts, which were narrowed to 38 and 30 studies, respectively, after applying eligibility criteria. Outcomes data were available from only 14 countries, with 47% of studies from UK institutions. CDI mortality at 30 days ranged from 2% in France to 42% in the UK. Mortality rates more than doubled from 1999-2004, and continued to rise until 2007, when reductions were noted in the UK. Recurrent CDI varied from 1% in France to 36% in Ireland; however, equivalent recurrence definitions were not used, which affects study outcomes. Median length of stay ranged from 8 days in Belgium to 124 days in the UK. The incremental cost of CDI was £4,577 in Ireland and £11,317 in Germany, after standardization to 2010 GBP. Country-specific averages, weighted by study sample sizes, ranged from 2.8% to 29.8% for 30-day mortality; 5.9% to 22.6% for recurrence; and, 16.1 to 37.9 days for LOS. **CONCLUSIONS:** Burden of CDI in Europe was most commonly described using 30-day mortality, recurrence, LOS and cost data. Country-specific reporting mandates partly influence the available data on CDI burden in EHCFs. The continued spread of CDI and resultant healthcare burden underscores the need for judicious antibiotic use.

PIN11

THE IMPACT OF DIRECTLY OBSERVED THERAPY (DOT) IN PATIENTS WITH TUBERCULOSIS

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OBJECTIVES: With adherence being a driver of treatment efficacy, we aimed to systematically assess treatment adherence and efficacy in a disease area impacted by the rapid emergence of multiple drug resistances as a result of non-adherence, tuberculosis. We systematically reviewed the literature to qualitatively assess the impact of directly observed therapy (DOT) versus other treatment modalities (non-DOT) on adherence and treatment efficacy in patients with tuberculosis. **METHODS:** English-language literature indexed in the MEDLINE database (accessed via PubMed) from January 1, 2000 through November 5, 2010 was systematically reviewed. Experimental and observational studies with at least 10 patients and one treatment group receiving a DOT were included and reviewed for adherence and efficacy outcomes. **RESULTS:** Thirty-seven tuberculosis studies were included. Twelve studies reported outcomes for both DOTs and non-DOTs. Six comparative studies reported treatment completion; DOT was numerically favored in 5/6 studies, with 3 studies showing significant treatment completion rate benefit in the DOT group. In Daneil et al., the DOT treatment completion benefit (61.6% DOT, 41.5% non-DOT) paralleled significantly less mortality (9.2% DOT, 19.8% non-DOT) and greater treatment success (61.6% DOT, 41.5% non-DOT) ($p<0.001$). In Chee et al., significantly greater treatment completion (89.2% vs. 70.7%) and fewer treatment interruptions (4.0% vs. 12.9%) in the DOT group paralleled fewer deaths (4.2% vs. 13.1%; $p<0.001$). Only one study showed lower treatment completion and more deaths for the DOT. However these results were juxtaposed with a higher cure rate and less treatment default. **CONCLUSIONS:** DOT has shown specific positive clinical impact by reducing mortality, and increasing treatment success and cure rate through increased adherence. This suggests the social pressure of health care professional involvement in observing therapy administration may be a driver of adherence. The association of both treatment adherence and positive clinical outcome with DOT may exist in other disease indications.

PIN12

EPIDEMIOLOGY, OUTCOMES, AND COSTS OF HOSPITALIZATION DUE TO PNEUMONIA, MENINGITIS, AND SEPTICEMIA IN CANADA FROM 2004 TO 2010

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OBJECTIVES: The hospital burden and costs of pneumonia, meningitis, and septicemia remain high. A retrospective database analysis was conducted for years 2004–2010 to quantify incidence, case-fatality, length of stay, and cost of hospitalization from all-cause pneumonia, meningitis, and septicemia in Canada (excluding Quebec). **METHODS:** Hospitalizations due to these conditions from 2004–2010 were identified from a national database in Canada using *International Classification of Diseases-10* codes. Statistics Canada provided the population at-risk data for incidence calculations. A costing model, devised using hospitalization data from Ontario, was used to estimate disease-specific costs. Results are reported for all age groups combined. **RESULTS:** From 2004–2010, hospitalized pneumonia incidence (cases per 1,000-persons) declined from 3.61 to 3.47, case-fatality rates declined from 12.3% to 11.6%, and average length of hospitalization increased from 9.99 to 10.54 days. Hospitalized meningitis incidence (cases per 100,000-persons) increased non-monotonically from 4.20 to 4.67, case-fatality rates increased from 5.5% to 6.6%, and average length of hospitalization increased from 12.36 to 12.88 days. Hospitalized septicemia incidence (cases per 100,000-persons) increased from 74.28 to 82.03, case-fatality rates remained at approximately 26%, and average length of hospitalization increased from 14.76 to 16.68 days. From 2004–2009, average total costs (Canadian $) increased from $12,195 to $15,742 for pneumonia, remained at approximately $19,000 for meningitis, and increased from $22,289 to $31,019 for septicemia. Incidence patterns for the three conditions differed by age and gender. **CONCLUSIONS:** The clinical and economic burden due to all-cause hospitalized pneumonia, meningitis, and septicemia across all ages combined have not demonstrated major reductions during the period reviewed and remain high, particularly for pneumonia. However, the pattern varied by age group. Substantial savings in costs and hospital resources may accompany prevention of these conditions by measures aimed at major underlying causes, such as influenza virus and *Streptococcus pneumoniae*.

PIN13

EPIDEMIOLOGY OF STAPHYLOCOCCUS AUREUS INFECTIONS IN CHILDREN: A LITERATURE REVIEW OF THE LAST 10 YEARS

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OBJECTIVES: To provide an overview on the epidemiology of *Staphylococcus aureus* (SA) infection in children from North America and Europe. **METHODS:** A literature review was conducted using Medline and based on 4 different search strategies to focus on a children population from birth to 18 years of age and to identify publications from the last 10 years. **RESULTS:** A total of 233 abstracts were retrieved, resulting in the selection of 21 publications. Findings suggest increased incidence rates of hospital-acquired (HA) SA infections worldwide over time. For instance in the USA, the increase in the overall incidence of SA infection among children is significant: from 20.8/1000 admissions in 2002 to 35.8/1000 admissions in 2007, as

well as in the incidence of Methicillin-Resistant SA (MRSA) infection among children: from 6.7/1000 admissions in 2002 to 21.2/1000 admissions in 2007. The most frequent clinical manifestations of SA infections include abscess and cellulitis, pneumonia, osteomyelitis and bacteremia. Children under the age of one year have a substantially higher rate of SA bloodstream (SAB) infections. Mortality rate due to SAB is up to 10% in neonates while approximately 2% among children. Rates of MRSA infections vary by geography: highest in the USA (31.4-59.5% of HA SA infections) and Southern Europe (28-63%), lower rates in Central Europe (6-22%) and the lowest rates in Northern Europe (<1%). MRSA infections are associated with higher rates of crude mortality than Methicillin-Sensible SA (MSSA) infection worldwide (OR: 1.93, 95%CI 1.54-2.12 – Shorr et al 2007). **CONCLUSIONS:** Serious SA infection represents a substantial and potential growing public health problem in the pediatric population. Given the difficulty of developing new classes of antibiotics and the increasing likelihood of resistance developing to all currently available antibiotics, a vaccine could help to prevent these infections in children and reduce associated morbidity and mortality.

PIN14

PRESCRIBING PATTERNS OF SEBIVO® (TELBIVUDINE): A SURVEY AMONG PHYSICIANS IN SELECTED EUROPEAN COUNTRIES

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OBJECTIVES: To describe the initial decision to prescribe telbivudine and the prescription patterns in outpatient clinical settings in Europe. To assess the prescriber's knowledge regarding the safety profile of telbivudine. **METHODS:** This observational cross sectional study examined the initial decision to prescribe telbivudine and the prescribing patterns among 48 physicians randomly selected in Germany, Italy and Spain. Physicians were eligible to take part in the study if they had prescribed telbivudine in the 12 months before the survey. **RESULTS:** More than 96% of the participating physicians were prescribing entecavir, telbivudine and tenofovir disoproxil fumarate at the time of the survey. Physicians reported a varied frequency for monitoring HBV DNA and alanine transferase (ALT) levels after initiation of telbivudine treatment (94% monitor at least at 6 months and 6% monthly). Drug characteristics most frequently mentioned by physicians as the reason to initiate treatment with telbivudine were rapid viral suppression (70%), efficacy in treatment-naïve patients (69%), favorable safety profile (49%) and predictable clinical outcomes (41.8%). Considering the characteristics of the individual patient at treatment initiation, the most frequent reasons to prescribe telbivudine were the patient's viral load at start of treatment (77%), age (62%) and serum ALT level (41%). Physicians reported being aware of the requirement for monitoring possible side effects particularly muscle related events and changes in renal function. **CONCLUSIONS:** Overall, these results indicate that physicians in the EU who prescribe telbivudine are aware of the potential benefits and risks of telbivudine treatment and the prescription is based on the well validated management guidelines (roadmap concept).

PIN15

TRENDS IN VARICELLA-ZOSTER INCIDENCE IN THE NETHERLANDS & BOOSTING EFFECT WITHIN HOUSEHOLDS

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OBJECTIVES: Vaccination against varicella is discussed in literature with regard to the possible effects on the incidence of herpes zoster, as both are caused by the varicella-zoster virus (VZV). We investigated whether temporal trends exist in the incidence of varicella and the incidence of herpes zoster. We also conducted a case-control study to investigate the boosting effect within families, based on our information on household situation. **METHODS:** Using Dutch general practitioner (GP) practices and pharmacies databases, longitudinal data, including free text fields, was collected about varicella and herpes zoster from approximately 165,000 patients over 7 years. Data included date of birth, date of diagnosis, gender and household situation. **RESULTS:** A seasonal trend for the incidence of varicella was found with a peak in spring, but no temporal trend was found for the incidence of herpes zoster. The results of the case-control study show the following: people living within the same households as varicella patients are less likely to develop herpes zoster within the period of +/− 2 months after exposure to varicella (mean age is 22.9 years; OR is 0.4; 95% CI: 0.3-0.5). However people within the same households as varicella patients are more likely to develop herpes zoster within 2 months to 7 years after exposure to varicella (mean age is 27.9 years; OR is 1.3; 95% CI: 1.1-1.5). **CONCLUSIONS:** The trend analyses show a seasonal trend in the incidence of varicella where the incidence of herpes zoster is more or less stable over time. The case-control study shows that people within the same household with varicella patients are less likely to develop herpes zoster immediately after exposure and more likely to develop herpes zoster later in life. As herpes zoster is positively correlated with age this is expected.

PIN16

RATES AND PREDICTORS OF GONORRHEA RE-SCREENING AMONG PRIVATELY INSURED PATIENTS WITH GONORRHEA IN 2007-2009

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OBJECTIVES: Gonorrhea is the second most commonly reported bacterial STD, most of which is diagnosed in the private sector. STD treatment guidelines suggest retesting people with gonorrhea 3 months post treatment. The objective was to examine the rate and predictors of re-testing within 3-6 months among privately insured patients (15-50 years) diagnosed with gonorrhea. **METHODS:** A commercial insurance database was used to extract patients with gonorrhea (ICD-9-CM codes: 98.xx) in year 2007-2009. The date of first gonorrhea diagnosis was used as the index date. Patients were required to have health insurance >= 6 months before and after the index date. We also defined the re-screening service for gonorrhea by using the CPT codes: 87081, 87205, 87590, 87591, 87492, 87800, and 87801 within 3-6 months after the index date. Logistic regression model was used to identify factors affecting the likelihood of gonorrhea retesting. **RESULTS:** Among 1016 persons diagnosed with gonorrhea, about 48% were in the age group 15-25 years, 36% in 25-40 years, and 16% in 40-50 years. The majority were women (61.4%). Only 110/1016 (10.8%) patients were rescreened within 3-6 months. The re-screening rates in 2007, 2008, and 2009 were 6.1%, 11.6%, and 13.7%, respectively. The re-screened individuals were more likely to be: women but not pregnant (OR=1.93, 95% CI: 1.20-3.12), pregnant women (OR=4.46, 95% CI: 2.17-9.19), compared to men; age 15-25 years old (OR=2.65, 95% CI=1.17-6.00) and 25-40 years old (OR=2.65, 95% CI: 1.15-6.09), compared to age 40-50 years old; and those diagnosed in 2008 (OR=2.11, 95% CI: 1.15-3.85) and 2009 (OR=2.44, 95% CI: 1.28-4.66), compared to 2007. **CONCLUSIONS:** While rescreening rates are increasing among privately insured patients diagnosed with gonorrhea, they are still very low. To improve rescreening rate, policy makers should urgently consider policy options including rescreening of all gonorrhea cases for effective control of the disease.

Infection – Cost Studies

PIN17

MODELLING BUDGET IMPACT (BI) OF VACCINATING AT-RISK ADULTS AND THE ELDERLY WITH 23-VALENT PNEUMOCOCCAL POLYSACCHARIDE VACCINE (PPV23) COMPARED TO 13-VALENT PNEUMOCOCCAL CONJUGATE VACCINE (PCV13) IN GERMANY

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OBJECTIVES: *Streptococcus pneumoniae* is a leading cause of life-threatening pneumococcal diseases (PDs). In Germany, PPV23 has been recommended in the elderly (aged 60 and over) since 1998. In 2006, the pneumococcal conjugate vaccine (PCV) was introduced in children and is expected to be launched in adults shortly. US experience showed that PCV vaccination of children led, ten years after its introduction, to a decrease in the incidence of invasive PD (IPD) caused by the PCV serotypes and to an increase in IPD caused by the non-PCV serotypes. This study aimed to assess the BI of vaccinating at-risk adults and the elderly (aged 60 and over) with PPV23 and/or PCV13 in Germany. **METHODS:** A multi-cohort, population-based Markov model was developed, consisting of five health states: no PD, IPD, NBPP (non-bacteraemic pneumococcal pneumonia), post-meningitis sequelae and death. Cohorts of individuals receiving initial vaccination, and the unvaccinated individuals were followed over time. All data were retrieved from published sources. German epidemiological trends were modelled according to US data. As vaccine effectiveness in adults against the vaccine-serotypes is not available for PCV13, optimistic and pessimistic hypotheses were defined. The net budget impact (NBI) was calculated for the 2012-2016 period. **RESULTS:** Vaccinating German at-risk adults and the elderly with PCV13 at current vaccine uptake resulted in an undiscounted NBI of €239 million in the base case, which is 22% higher than vaccinating with PPV23. No scenario was found in favour of PCV13. Results were sensitive to vaccination uptake, vaccine prices, vaccine effectiveness and epidemiological trends assumptions. **CONCLUSIONS:** Using a population-based approach, our model was designed to simulate the progression of PDs in a changing environment in terms of demographics, epidemiology and available vaccines. According to this analysis, PCV13 is likely to result in a significant impact on the healthcare budgets.

PIN18

BUDGET IMPACT ANALYSIS OF TENOFOVIR IN TREATMENT OF CHRONIC HEPATITIS B (CHB)

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OBJECTIVES: To estimate the impact of tenofovir reimbursement in treatment of adults with chronic hepatitis B in Poland. **METHODS:** Analysis was performed from the public payer perspective in 5-year time horizon. Target population was defined as adults with chronic hepatitis B who are eligible for antiviral treatment. Size of the target population was estimated on the basis of Polish sales data obtained from IMS, including the sale of nucleoside analogues in the period January 2007-March 2010. In the analysis following cost categories were included: drugs (tenofovir, entecavir, adefovir, lamivudine), monitoring, hospitalizations and complications of hepatitis-B (cirrhosis, hepatocellular carcinoma). Reimbursement assumption was that tenofovir will be financed in heath therapeutic program on the basis of financing principles of entecavir and adefovir. It was assumed that tenofovir will be initial (first choice) therapy in population of patients who are eligible to tenofovir, entecavir or adefovir therapy and that in case of reimbursement tenofovir will be replacing entecavir and adefovir. **RESULTS:** The size of target population will be circa 4100 people in 2011 and increases to circa 6200 people in 2015. Forecast population of patients using tenofovir is ca 1500 patients in 2011 and will grow to ca 3200 patients in 2015. In current scenario (lack of tenofovir reimbursement) expenditures on antiviral drugs in target population will be ca 76,000,000 PLN in 2011 and will steadily increase to ca 120,000,000 PLN in 2015. Total expenditures in the target